Interim Forest Management Plan
Yellowstone State Wildlife Area

Property Identifiers

Property Name and Designation (multiple small properties can be grouped):
YELLOWSTONE STATE WILDLIFE AREA

County(ies): **LAFAYETTE**

Property Acreage: **4,215**

Forestry Property Code(s): **8920**

Master Plan Date: None. **Master Planning for this property scheduled for 2010-2014.**

Property Assessment

The following should be considered during the property assessment:

GENERAL PROPERTY DESCRIPTION

The **Yellowstone State Wildlife Area** is a 4,215 acre property located in northeast Lafayette County near the towns of Fayette and Argyle. The property is adjacent to and includes Yellowstone Lake, and is bordered to the east by additional state-owned property including Yellowstone Lake State Park and Yellowstone Savanna State Natural Area (imbedded within the state park). The property consists mostly of rolling upland grass and agricultural fields, with scattered woods and old oak savanna.

- **LANDSCAPE AND REGIONAL CONTEXT**

  The **Yellowstone State Wildlife Area** lies in the **Southwest Savanna Ecological Landscape**, which is also located within the Driftless Area of Wisconsin, a region that has not been glaciated for at least the last 2.4 million years. Two Landtype Associations are found within Yellowstone State Wildlife Area; the Platteville Savanna (222Le02) landtype association comprises more than 80% of uplands on the property area, with the remaining percentage classified as Pecatonica Valley (222Le03). The Platteville Savanna Landtype Association is typified by slightly sloping topography with well drained silty and loamy soils. Most areas occur over dolostone, limestone, or sandstone bedrock. The Pecatonica Valley Landtype Association is sloping with well- to poorly-drained silty soils. Within the property, this landtype is mostly confined to the boundaries of the lake bed and impoundment.

  The topography within the greater Southwest Savanna Ecological Landscape is characterized by broad, open ridgetops, deep valleys, and steep, wooded slopes. Historical vegetation in this landscape consisted primarily of prairie, oak savanna, and oak-dominated forests. This landscape was once dominated by fire-dependent natural communities representing the continuum of prairie, oak savanna, oak woodland and oak forest. This is arguably Wisconsin's best ecological landscape to manage grasslands at large scales, primarily through public/private partnerships. Recently, a large area within this ecological landscape was designated by the Wisconsin Natural Resources Board as the **Southwest Grassland and Stream Conservation Area**. The project boundary, which includes the Yellowstone Wildlife Area property, encompasses high-priority grasslands, prairies, savanna remnants and watersheds across parts of southern Iowa, northern Lafayette, southwest Dane and far northwestern Green counties.

  The major forest types found in the Southwest Savanna Ecological Landscape are oak-hickory and maple-basswood. Prairie and oak savanna remnants occur mostly on rocky hilltops and slopes that

were untillable (too steep to farm); many of these sites are currently pastures. Some pastures have never been plowed, and those that historically supported prairie may retain remnants of the former prairie flora. Relict stands of pine occur on bedrock outcroppings along some stream systems.

Historically, vegetation in this landscape consisted primarily of prairie, oak savanna, and oak-dominated forests. Today, only 11% of current land cover is classified as timberland in the Southwest Savanna Ecological Landscape. Agricultural crops (corn, soybeans, small grains, hay) cover more than 70% of this landscape, with lesser amounts of grassland (mostly in pasture), barrens and residential areas. Less than one percent of this landscape is in public ownership.

The drainage patterns of streams in the Southwest Savanna Ecological Landscape are dendritic, which is a pattern characteristic of unglaciated regions. Flowing waters include both warmwater and coldwater streams and coldwater springs. Although natural lakes are virtually absent in this Ecological Landscape due to the lack of direct, recent glacial influence on the region, several large rivers flow through, including the Pecatonica, Galena, and Yellowstone Rivers. Impoundments and reservoirs have been constructed on some rivers and streams.

Soils on hilltops tend to be mostly silt loams, while in other locales have a deep cap of loess-derived silt loam. Valley soils include alluvial sands, loams and occasionally peats. The Southwest Savanna Ecological Landscape is underlain by sedimentary bedrock, especially dolomites and sandstones. Soils within the property tend to be deep, well-drained silt loams. Limestone and occasionally sandstone bedrock lie close to the surface in scattered locations throughout the site, resulting in shallow soils and exposed bedrock.

- **PROPERTY CONTEXT/LANDSCAPE**

Contextually, Yellowstone State Wildlife Area has been identified within the 2005 Wisconsin Wildlife Action Plan as part of the **Southwest Grasslands and Streams Conservation Opportunity Area** (COA), which has upper Midwest importance for its conservation opportunities. The 2006 Land Legacy Report (WDNR 2006b) also identified Yellowstone Lake State Wildlife Area managed lands as a Legacy Place in acknowledgment of its having a large water body (impoundment), its grassland, savanna, woodland, and marsh habitats, and in particular its recreational potential. Additionally, in 1997, Sample and Mossman identified 26 “priority landscapes” in Wisconsin that represent unique opportunities for landscape-scale grassland management for grassland birds. State-owned lands surrounding Yellowstone Lake were identified as part of the **“Yellowstone/Pecatonica River Grasslands and Savanna”** priority landscape. Yellowstone Lake managed lands have oak savanna, idle cool- and warm-season grasslands, dry and wet old field habitats, dry and dry-mesic prairie, and upland shrub habitat, all of which can benefit grassland bird species when considered as a whole and within the larger landscape. Additional management opportunities for natural communities or species are listed below under the Wildlife Action Plan section.

- **HISTORY OF LAND USE AND PAST MANAGEMENT**

The early vegetation of Wisconsin, mapped by Robert Finley and published in 1976, indicates that Yellowstone Lake was once about 70% oak-dominated forest (white, bur, and/or black oak), 10% oak opening, and 10% wetland (marsh, sedge meadow, wet prairie, and/or lowland shrub). Oaks were noted as small, ranging from 8-16 inch DBH, and included bur, white, black and northern red. Occasional bur oaks were noted at 30-33 inch DBH. Surveyors described the terrain as uneven, rolling, and even “exceedingly hilly,” and described the vegetation as thinly timbered. All of this information points towards prairie, oak savanna and oak woodland as the dominant cover types.

The Yellowstone State Wildlife Area was established in the early 1950’s. Since then the property has grown to approximately 4,000 acres in size. The western half of the wildlife area was purchased in one block from John Hancock Mutual Insurance Company in 1989. This portion was badly eroded and overgrazed prior to state ownership. Most of the cropped area that was highly erodible has since

been planted to native grasses. Today the Yellowstone State Wildlife Area property contains a mix of open grasslands, crop fields, oak savanna and forest. Most of the oak savanna has been degraded and is converting to northern hardwoods. Approximately 500 acres of the wildlife area is currently under cultivation (corn and hay). Upland management is directed toward benefiting grassland nesting birds, turkeys, pheasants and deer. Forest management is directed at maintaining oak and restoring savanna.

In 1954 Yellowstone Lake was created with the construction of a 1,200-foot dike on the Yellowstone River, creating the 455-acre Yellowstone Lake. The lake is fed by the Yellowstone River, Steiner Branch (managed for brook trout) and two small unnamed spring-fed streams that originate on the property. The lake itself is managed for warm water fishery and recreation.

The primary use of the wildlife area is for public hunting, mostly pheasants, turkey and deer. Other uses include hiking, bird watching, berry picking, horseback riding, cross country skiing and snowmobiling. The property has the only equestrian trail (on a wildlife area) in the state. There are roughly 30 miles of trail used by 1,000 riders each year.

SITE SPECIFICS

- ***Current Forest Cover (forest types, size classes and successional stages):*** The majority of the forest cover types on the Yellowstone Wildlife Area are upland associated species and comprise about half of the land area. The non-timber land area consists of cropland, old CRP fields, creek bottoms and planted nesting cover.

  Current Forest Cover for Yellowstone State Wildlife Area
  - Forested cover types total 2,024 acres or 49% of total recon acres.
  - Oak - 946 acres (47% of forested acreage) - 3%: 20-year old plantation, 26%: 73-100 years old, 71% 100+ years old. Almost none of this forest cover type is regenerating to oak, and only 2% is classified as having a secondary or understory oak type.
  - Central Hardwoods - 851 acres (42%of forested acreage) - 16%: 16-40 years old (pole sized), 51%: 41-60 years old (pole to small saw sized), 30%: 60-83 years old (small saw to large saw sized).
  - Bottomland Hardwoods - 17 acres (1% of forested acreage) – all 55 years old
  - Northern Hardwoods - 36 acres (2% of forested acreage) – all-aged forest, oldest trees are 125 years old.
  - Miscellaneous Deciduous - 109 acres (5% of forested acreage) – 20 year old box elder, elm, etc.
  - Planted Red and White Pine - 63 acres (2% of forested acreage) - all 50-60 years old (small saw to large saw sized).
  - Aspen – 2 acres
  - Non-forested acreage accounts for 2,098 acres or 51% of total recon acres. Yellowstone Lake - 433 acres (21% of non-forest acreage). Farmland - 396 acres (19% non-forested acres). Grass - 817 acres (39% of non-forested acres). Upland Brush - 249 acres (12% of non-forested acres). Lowland Brush - 189 acres (9% of non-forested acres). Developed and parking areas – 5 acres.

  Today, four general land cover types dominate Yellowstone and Blackhawk Lakes: open upland, brushy upland, wooded upland, and wetland. Details of these cover types vis-à-vis their relict native plant communities and condition following such a rich agricultural past are discussed below.

  Wooded uplands comprise approximately half of the area, grassy uplands comprise approximately 30%, brushy uplands comprise approximately 5%, while brushy wetlands comprise another 5%, and the lake itself approximately 10% of the area. Wooded areas at Yellowstone

State Wildlife Area occur naturally in ravines and on north- and east-facing slopes. They consist of mostly young second-growth southern dry-mesic forest and overgrown oak savanna with depauperate ground layers and abundant non-native invasive species, though some higher quality wooded blocks have remained relatively intact. Occasional tiny Pine Relicts (0.5 acres or less) occur here as well, and 63 acres of pine plantation are scattered throughout the property. About one-half of the area occupied by open uplands is currently under cultivation, while the remaining half is mostly old field or is actively being hayed. In places where soils were too shallow for plowing, remnant Dry Prairie occurs, albeit in a degraded state; non-native weedy and invasive plants, and woody invaders often dominate. Low-quality wetlands (Southern Sedge Meadow and Shrub-carr) occur naturally along narrow stream corridors at Yellowstone Lake and in association with springs, and unnaturally in the form of emergent marsh at impoundments.

According to the "Rapid Ecological Assessment of Yellowstone Wildlife Area, Blackhawk Lake and Yellowstone Lake State Park" there are two major opportunities for managing rare forest types. They are managing for oak savanna and managing the Yellowstone Forest (290 acres) which is an example of a Southern Dry-mesic Forest on moderate to steep north- to east-facing slopes and ravines with very large, old canopy trees (up to 36 inch DBH red oak, bur oak, and basswood, with lesser amounts of shagbark hickory, big-tooth aspen and white oak). This forest has extremely high species richness with at least 121 native ground layer species (some of which are rare).

- ***Wildlife Action Plan / Species of Greatest Conservation Need****:* Yellowstone State Wildlife Area is specifically listed in the Wildlife Action Plan's Implementation document for the Southwest Savanna Ecological Landscape. The Wildlife Action Plan identifies 17 natural community types for which there are "major" or "important" opportunities for protection, restoration or management in the ecological landscape. Of those, 11 are present on the Yellowstone Lake managed lands. Natural communities having "major" opportunities include: Dry Prairie, Oak Opening (oak savanna), Oak Woodland, Surrogate Grasslands and Warmwater Streams. Those communities having "important" opportunities include Coolwater Streams, Moist Cliff, Pine Relict, Southern Dry Forest, Southern Dry-mesic Forest and Southern Mesic Forest.

  Yellowstone Lakes managed lands offer opportunities to restore prairies (often as Surrogate Grasslands), Oak Openings and Oak Woodlands on a landscape scale and within a matrix of other habitats. Notably, there is also an opportunity to protect and restore a high-quality Southern Dry-mesic Forest ecosystem on Yellowstone State Wildlife Area. Southern Dry-mesic Forests are common throughout Yellowstone Lake, particularly in areas with topographical variation and deeper silt loams. While some of the dry-mesic forests are still in the early stages of recovering from past logging, large canopy oaks remain in many other areas, though the diversity of subcanopy trees, shrubs, and native ground layer species characteristic of primary, undisturbed forest are diminished in number or are absent altogether.

  Priority Species of Greatest Conservation Need (SGCN) for the Southwest Savanna Ecological Landscape associated with the community and habitat types at Yellowstone State Wildlife Area include *Blanchard's Cricket Frog*, Bullsnake, *Prairie Ringneck Snake*, Yellow-bellied Racer, American Golden Plover, Bell's Vireo, Bobolink, Brown Thrasher, *Dickcissel*, *Eastern Meadowlark*, Field Sparrow, Grasshopper Sparrow, *Henslow's Sparrow*, *Loggerhead Shrike*, *Northern Bobwhite*, Northern Harrier, Red-headed Woodpecker, *Short-eared Owl*, *Upland Sandpiper*, Vesper Sparrow, Western Meadowlark, Willow Flycatcher, *Prairie Leafhopper*, *Red-tailed Leafhopper*, *Regal Fritillary*, Ottoe Skipper, Whitney's Underwing, Marbleseed Leafminer, and *multiple leafhopper species*. (Note: those in *italicized* font indicated *high priority SGCNs.*) Many of these species will primarily benefit from prairie, surrogate grassland and oak opening or woodland management. A few will benefit from the development of quality "feathered" edge habitat along field edges and other open habitats.

  Other SGCNs that may benefit from management of Southern Dry-mesic Forest types include Blanding's Turtle, Ornate Box Turtle, Prairie Ring-necked Snake, Red-headed Woodpecker,

Yellow-bellied Racer, Blue-winged Warbler, Bullsnake, Eastern Red Bat, Northern Long-eared Bat, Timber Rattlesnake, Wood Thrush, Woodland Vole and Yellow-billed Cuckoo.

- ***Conservation Opportunity Area (COA) designations***: Yellowstone State Wildlife Area has been identified within the 2005 Wisconsin Wildlife Action Plan as part of the **Southwest Grasslands and Streams Conservation Opportunity Area** (COA), which has upper Midwest importance for its conservation opportunities.
- ***Natural Heritage Inventory (NHI) / Rare species:*** Yellowstone State Wildlife Area supports numerous rare species, including one State Endangered species, six State Threatened species, eight Special Concern species and one associated rare animal assemblage. NHI screening will be conducted prior to all future management activities for both rare species and natural community types.
- ***State Natural Area designations****:* There are no SNAs located within the boundaries of Yellowstone State Wildlife Area. However, at the northeast end of Yellowstone Lake, within the boundaries of Yellowstone Lake State Park, a small low-quality Dry Prairie on a steep southwest-facing slope is protected within the 220-acre Yellowstone Savanna State Natural Area.
- ***High Conservation Value Forests (HCVF) or other resources / natural community types limited in the landscape:*** Some features, community types and portions of the property warrant designation as a High Conservation Value Forest. In particular, the Yellowstone Forest consultation area offers an opportunity to protect and restore a high-quality ecosystem, as well as to manage for older and old-growth forests. Older forests (greater than 100-120 years old) in Wisconsin are rare and declining, and the WDNR has identified a need to conserve, protect and manage old-growth forests as a component of Forest Certification.
- ***Biotic Inventory status (see website):*** A Rapid Ecological Assessment of the property was completed in June 2012. This document is available on the Department's website http://dnr.wi.gov/topic/nhi/nhireports.asp under DNR Publication PUB-ER-834-2012. The entire property has been evaluated and entered into WisFirs; however, 90% or more of the wooded areas have not been evaluated or updated since 1988 to 1992. Additional inventories will need to be conducted to facilitate development of the property master plan, which is set to be initiated prior to 2014.
- ***Deferral/consultation area designations:*** Draft deferral/consultation area designations have been identified on the property (Yellowstone Forest (consultation)); however, the process has not been completed at the time of this draft plan (March 2013). Any management proposed within a deferral or consultation area is to be conducted only after ensuring that such activities will not preclude major options for master planning teams to consider.
- ***Invasive species:*** There are a number of nonnative invasive species present at Yellowstone State Wildlife Area. Garlic mustard, wild parsnip, Eurasian bush honeysuckle, Russian olive, multiflora rose, purple loosestrife and reed canary grass are the most abundant. Efforts have been made to control these species with herbicide, cutting and controlled grazing.
- ***Soils:*** Most soils found on the property are of the Dubuque Sohn association. These are light colored, well drained and underlain by limestone.

CULTURAL AND RECREATIONAL CONSIDERATIONS

- ***Cultural and archeological sites (including tribal sites):*** There are many sites of cultural and archeological significance found on the property. These are mostly prehistoric Native American sites along streams. There are also a number of post-settlement cemeteries. Additionally, there are three old limestone root cellars on the property of unknown age. All known sites are protected during forest management operations. The state archeologist will be consulted prior to any ground-disturbing activity to prevent disturbance of these sites.
- ***Recreational uses:*** Hunting is the primary recreational use of the property. Other uses include horseback riding, bird watching, and hiking, berry picking, snowmobiling and cross country skiing.

Part 2: Future Management

FOREST MANAGEMENT OBJECTIVES (Outline primary forest management objectives):

(1) Manage and maintain oak cover types where feasible. Most of the Oak on this property is associated with Central Hardwood stands. The oak cover type will slowly and naturally convert to more shade-tolerant central and northern hardwood cover types over time. The creation of gaps via timber sales and hand planting to oak seedlings will attempt to maintain oak on the landscape long-term. There are old CRP fields that were planted to a component of oak in the early 1990's. Successful areas of oak planting can be maintained for future oak islands.

(2) The core area of Southern Dry-mesic Forest within Yellowstone Forest is relatively large in size, and varies highly in quality from a forest management perspective. The boundaries of this stand include younger, lower quality forest that lies further inland. This area should be managed to achieve the same structure and composition as those of the core area, primarily by allowing natural succession to occur unimpeded. Long-term development and maintenance of older forest composition, structure and function within a minimally manipulated environment should be a consideration for this site, including opportunities to include and manage for oaks, where appropriate.

(3) Allow the Central Hardwood type to regenerate naturally, but to maintain the large oak within these stands as long as possible.

(4) Manage for early successional forest types, where appropriate. Maintain the small amount of aspen for its benefit to wildlife. Aspen is a very small component of the total forest cover type on the property.

(5) Manage northern hardwood stands on an all-aged basis to promote a variety of age classes within each of the stand, while retaining oak as a component where feasible. This management will promote the more shade tolerant hard maple species. This cover type represents less than 2% of the forested area.

(6) Manage bottomland hardwood stands on an all-aged basis to maintain the current acreage of bottomland hardwoods and associated wetland and riparian habitats.

(7) Reduce the acreage of planted red and white pine on the property. Clearcut planted areas of red and white pine and convert to grass openings or plant to oak.

(8) With all forest management objectives, there are several more universal objectives that can be attained including increasing large snags and coarse woody debris, controlling the spread of invasive plant species and consideration for Wildlife Action Plan priorities and management of SGCNs.

PROPERTY PRESCRIPTIONS (Identify specific and pertinent prescriptions by area or forest type, including passive management areas, extended rotation, and other information that will help achieve the objectives):

(1) **OAK** – Plans are to manage the oak resource that is present on the property as long as possible and where feasible. Some conversion of these stands to more shade tolerant northern and central hardwoods is inevitable; however, where feasible efforts will be made to incorporate gaps of 1 to 2 acres into timber sales, treat unwanted vegetation, and hand plant up to 1,000 oak seedlings per acre.

(2) **SOUTHERN DRY-MESIC FOREST** – Management will be primarily allowing natural succession to occur unimpeded. Where opportunities exist, managing for oaks within lower quality areas or openings may be pursued in order to provide some oaks on the landscape in the future.

(3) **CENTRAL HARDWOODS** – Maintain the large oak within these stands as long as possible. Allow the Central Hardwood type to regenerate naturally, but incorporate 1 to 2 acres gaps in timber sales and hand plant those gaps to 1,000 oak seedlings per acre.

(4) **ASPEN** – The aspen type will be managed through coppice, with standards if oak is present.

(5) **NORTHERN HARDWOODS** – Mange the stands on an all-aged basis while retaining oak as a component of these stands.

(6) **BOTTOMLAND HARDWOODS** – Manage the stands on an all-aged basis to maintain the current acreage of bottomland hardwoods. Due to the threat of Emerald Ash Borer this stand will be managed to favor red and silver maple in the long term.

(7) **RED AND WHITE PINE** – Clearcut planted areas and convert to grass openings or plant to oak at 1,000 seedlings/acre.

(8) **ALL STANDS** – The Wildlife Action Plan describes Priority Conservation Actions that make effective use of limited resources and address multiple species with each action. Implementing these actions and avoiding activities that may preclude successful implementation of these actions in the future would greatly benefit SGCNs at Yellowstone State Wildlife Area. All proposed forestry prescriptions will reference Priority Conservation Actions, Wildlife Action Plan priorities, property objectives and be based on individual stand level needs. In particular, since the property is on the Southwest Grassland and Stream Conservation Area, the open areas need to be managed for grassland nesting birds. Existing cropland will be converted to grassland nesting cover. Savannas need to be maintained and where degraded restored.

APPROVALS:

_____
District Ecologist Date

_____
Forester Date

_____
Property Manager Date

_____
Area/Team Supervisor Date